6-1-2017 Aerovox Conf. Call (see attached also)

- 0-0.5' below top of native
  * - Steve: make sure Lab tech looks in overlying OL as well

- >2,000 (or >1,000) ppm => NAPL
  - Patty W. to make sure IA reasonable

- 10 ppt for Aroclor (time element) (< 1 mm)
- FLUX: also get "PCB diffusibity" & boundary layer thickness
  - advective & diffusion flux M/A/T
  - Patty to send equation (Elisa - expert) or Lisa
  ** get expert presentation ??? (1)

- Steve: need hole gauge; Mike - will have one
  - and well transducers? (2) Me ask AVX

- Patty: use Rubble model (spreadsheet approach)

- Design Overall: EPA recommendation use SL as presumptive
  - schedule: spring/June
  Ellen: will back out a schedule from contracting standpoint
  → Steve to look at SL WP

Aervox Harbor Interim Cap Field Work Plan

1.0 Introduction

2.0 Background

- 2.1 Site Location and Description
  - 2.1.1 Aerovox Background
  - 2.1.2 Previous Investigations
  - 2.1.3 Previous Remedial Actions
- 2.2 Scope of Work
- 2.3 Schedule of Operations
- 2.4 Key Personnel

3.0 Pre-Design Data Collection

- 3.1 DNAPL Data Gap Sampling—to determine the extent of DNAPL in the native deposits below the organic layer. This will be performed at locations off-set from the 2012 and 2015 shoreline investigation to determine if the location of DNAPL has been adequately characterized.
  - 3.1.1 Locations—a total of 13 locations outside of the current footprint of the 2012 and 2015 investigations are necessary to confirm the extent of DNAPL in the Harbor sediments. These locations are south, east, and north of the furthest extent of the previous coring programs. Sample locations to be reached by pontoon boat.
  - 3.1.2 Piston Core Sampling—a piston core device will be employed with a 2.75" polycarbonate core barrel. The device will be advanced by hand to refusal, usually about 3 to 3.5 ft below the top of the sediment surface. The device will be withdrawn and presence of native material (gray marine sediments) will be confirmed prior to saving the core. The core will be cut to size and capped on both ends and stood upright until they can be refrigerated.
    - 3.1.2.1 Sediment Collection—the core will be opened in the Area C lab trailer, described based on USCS classification, and two samples; one 0-0.5 ft from the top of native and one at the bottom 0.5 ft of the core will be immediately collected 50 ml pre-treated glass cylinders using a sediment syringe and stored prior to delivery for VOCs. Then, representative samples from the two intervals will be collected in 8 oz glass jars. These samples will be delivered for PCB analysis.
    - 3.1.2.2 Field Dye Test—A hydrophobic dye (such as Oil Red O) will be used to determine if NAPL is present in the samples. A small portion of the 0-0.5 ft interval from top of native and 0.5 ft interval at bottom of core will placed in a clear glass jar with a portion of the dye and visual observation will determine if any NAPL is present in the sample.
  - 3.1.3 Laboratory Analysis
    - 3.1.3.1 Total PCBs—Immunoassay—3 day TAT
    - 3.1.3.2 Total VOCs—EPA SW8260C—10 day TAT

below native?

clarify

OK for NAPL levels?

3.1.4 Schedule—First out of the gate. 2-3 days of collection/processing, 2-3 days of analysis. June 2017.

3.2 Groundwater Flux Investigation—to determine the area of discharge of fresh water (groundwater) into the Harbor and to estimate the flux of PCBs into the harbor from the pore water in the sediment.

3.2.1 Drive Points—Push point sampler 50 mesh cylindrical filter screen stainless steel with ½" ID LDPE tubing and ¾" drive pipe extension. Water Level meter and YSI multiparameter instrument with flow-thru cell.

3.2.1.1 Locations—55 total, 1 ft and 3 ft collection intervals. Locations are set up on continuous 50 ft grid centered over Location ASB-16 (highest concentration of PCBs in the shoreline investigations). Locations to be reached by pontoon boat.

3.2.1.2 Hydraulic Data Collection—calculate head difference between intervals with water level meter

3.2.1.3 Physicochemical Parameters—temperature, pH, specific conductivity, dissolved oxygen, oxidation-reduction potential, turbidity—with YSI and flow-through cell

3.2.1.4 Pore Water Collection—collected with through the LDPE tubing using a peristaltic pump. Samples collected after physicochemical parameters are stabilized.

3.2.1.5 Laboratory Analysis—All 10 day TAT

3.2.1.5.1 Total PCBs (as Aroclors)— EPA SW8082A

3.2.1.5.2 Total VOCs—EPA SW8260C

3.2.1.5.3 Methane—RSK 175

3.2.1.5.4 Sulfide—SW9030B

3.2.1.5.5 Total Dissolved Metals (Ca, Mg, Na, K, Fe, Mn)—EPA SW6010C

3.2.1.5.6 Sulfate-Chloride-Nitrate—E300.0

3.2.1.5.7 Total Alkalinity—E310.1

3.2.1.5.8 Dissolved Organic Carbon—E415.1

3.2.1.6 Schedule—July 2017—10 days of sampling—optimal time 2 hours before and 2 hours after diurnal low tide.

3.2.2 Passive Samplers--Determine the net PCB flux across the sediment-water interface. Passive samplers (polyethylene devices, or PEDs) will be used to determine dissolved PCB concentrations in porewater below the sediment-water interface and surface water above the sediment-water interface. PCB flux will be calculated using the porewater and surface water PCB concentrations.

3.2.2.1 Prepare for Field Deployment--Determine the net PCB flux across the sediment-water interface. Passive samplers (polyethylene devices, or PEDs) will be used to determine dissolved PCB concentrations in porewater below the sediment-water interface and surface water above the sediment-water interface. PCB flux will be calculated using the

porewater and surface water PCB concentrations.Locations—22 sample locations co-located with drive point sample locations

3.2.2.2 PED deployment

3.2.2.2.1 Deploy in July/August 2017

3.2.2.2.2 Deploy two PEDs at each of the 21 sampling locations identified by Jacobs Engineering from a 20-foot pontoon boat (the *R/V Gale Force*) (note: two PEDs will be deployed at each sampling location to provide a backup in the event that one of the samplers is compromised).

3.2.2.2.3 Two days allocated for deployment at all locations.

3.2.2.2.4 Using a pole, insert each sampler into the sediment bed with half of the frame below the sediment-water interface exposed to sediment, and half above the sediment-water interface exposed to the water column. A line with a buoy will be attached to each sampler to facilitate retrieval.

3.2.2.2.5 PEDs will be deployed for approximately 30 days.

3.2.2.2.6 Field-based quality control (QC) samples will include one field replicate and one PED trip blank.

3.2.2.3 PED recovery

3.2.2.3.1 One day allocated for PED recovery at all locations.

3.2.2.3.2 Recover each individual PED sample using the retrieval line and wrap (while still in its frame) in solvent-cleaned aluminum foil (seal edges of foil by folding); place the foil packet in a large plastic bag.

3.2.2.3.3 Transport the PEDs on ice and under custody to the Battelle laboratory for processing and analysis (store frozen if not extracted and analyzed immediately).

139 congeners

what analyses?

3.2.2.4 Laboratory Analysis

3.2.2.4.1 ~~Total PCBs—performed at Area C Lab trailer for immunoassay analysis.~~ both IA & ?

3.3 Sediment Characterization

3.3.1 Locations—3 locations within proposed footprint of interim cap. Locations should be selected that exhibit the greatest variability in stratigraphy.

3.3.2 Data Collection

3.3.2.1 Deployment of barge mounted sonic rig

3.3.2.2 Collection of in situ sediment samples within poly-tubing 20-30 feet deep. Mike - to support modeling

Steve: don't need this deep?

3.3.2.3 Samples collected by stratigraphic unit (one each, if present). Samples should be collected from the most representative section of the core. Samples are not to be composited, crushed, or mixed.

3.3.2.3.1 Black, organic, hydrophyllic marine sediment

3.3.2.3.2 Gray, inorganic marine sediment (native)

3.3.2.3.3 High energy outwash (sand)

Steve: could be costly & GW may change w/ AVX remedy

get cost est. ~~Rick~~ $30- Mike to refine

3.3.2.3.4 Low energy lacustrine sediment (silt + clay)

3.3.2.3.5 Dense glacial till

3.3.3 Laboratory Analysis—10 Day TAT

- 3.3.3.1 Bulk Density—ASTM D2937
- 3.3.3.2 Particle size (sand + silt + clay)—ASTM D422
- 3.3.3.3 Total Carbon—ASTM D2974
- 3.3.3.4 Particle Density—ASTM D854
- 3.3.3.5 Sulfate-Sulfide—ASTM D516
- 3.3.3.6 pH—ASTM D4972

for GW modeling
- add sat. hyd. cond.

Vane shear?
Strength parameters not included (yet)
- sep. task (Steve & John)

3.3.4 Schedule—August 2017, 4 days for mobilization, collection, demobilization, and processing.

3.4 Gas Ebulition

Dan G. working w/ Schroeder

3.4.1 Location(s)

3.4.2 Data Collection

3.4.3 Laboratory Analysis

3.5 Wave and Current Energy - Steve talked w/ Paul Dragos, more work to come
John also
wave energy prob. most imp

3.6 Ice Impacts

4.0 Quality Assurance/Quality Control

4.1 Field Based Quality Control

4.2 Sample Handling and Custody Procedures

4.3 Decontamination

4.4 Quality Management and Nonconformance

5.0 Documentation and Reporting

5.1 Sample Identification

5.2 Reporting

6.0 Safety Procedures

7.0 Unanticipated Discovery of Cultural Remains

8.0 References